

WHAT IS CLAIMED IS:

1. A method of identifying a protein that binds to a bait element, the method comprising:
obtaining a cell whose genome comprises one or more integrated bait-reporter constructs, wherein each of the one or more bait-reporter constructs comprises
 - (a) a single copy of a bait element flanked by lambda recombination sites, wherein the bait element comprises at least 250 base pairs; and
 - (b) a reporter gene;transforming the cell with an expression vector encoding a fusion protein comprising an activation domain; and
assessing activation of the reporter gene,
wherein activation of the reporter gene indicates that the activation domain fusion protein has bound to the bait element.
2. The method of claim 1, wherein the cell is a yeast cell.
3. The method of claim 2, wherein the yeast cell is a YM4271 cell.
4. The method of claim 2, wherein the reporter gene is HIS3.
5. The method of claim 2, wherein the reporter gene is LacZ.
6. The method of claim 1, wherein two reporter genes are used.
7. The method of claim 6, wherein the cell is a yeast cell and the reporter genes are HIS3 and LacZ.
8. The method of claim 1, wherein the cell is a mammalian cell.
9. The method of claim 8, wherein the reporter gene is a fluorescent gene.
10. The method of claim 9, wherein the fluorescent gene is selected from the group consisting of luciferase, green fluorescent protein, yellow fluorescent protein, red fluorescent protein, blue fluorescent protein, or a fluorescent variant of any of said proteins.
11. The method of claim 1, wherein the bait element comprises more than 500 base pairs.

12. The method of claim 1, wherein the fusion protein is an activation domain-transcription factor fusion protein.
13. The method of claim 1, wherein assessing activation comprises plating the yeast cell on nutrient deficient plates under growth conditions, and observing any growth of yeast cells.
14. The method of claim 1, wherein assessing activation comprises determining the color of the yeast cells.
15. The method of claim 1, further comprising
selecting a cell in which a reporter gene is activated; and
isolating the cDNA encoding an activation domain fusion protein that is bound to the bait element from the cell.
16. The method of claim 15, further comprising determining the sequence of the isolated cDNA.
17. The method of claim 1, further comprising contacting the cell with a test compound, and evaluating the effect of the test compound on binding of the bait element to the activation domain fusion protein.